A JURASSIC PARK IN VĀLMĪKI RĀMĀYAṆA

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Introduction:

The title is chosen euphemistically and figuratively to analyze the antiquity of Rāmāyaṇa, Vālmīki and certain information available in the literature[1]. In Vālmīki Rāmāyaṇa[2], there have been specific references and description about certain stange animals, which are very much intriguing, perplexing and interesting too for researchers with scientific background to appreciate, assess and decide the authenticity of such literary evidences. The references and description found in Sundarakāṇḍam are as follows:

1. The grand palace of Rāvaṇa was protected by many strange animals.
2. Certain characteristic horses were neighing.
3. There were many elephants and they had four tusks.
4. Protected fat animals and birds were also there.
5. The palace was protected by four tusked elephants and as well as three tusked animals.
   However, three tusked animals are not named.

From the scientific point of evolution of animals in accordance with the geological eras go back to millions of years back. How, then such description could be found in Vālmīki Rāmāyaṇa? This is critically analyzed in this paper.

The description found in Sundarakāṇḍam:

Interestingly, Vālmīki or the poet who wrote Rāmāyaṇa mentions about certain fantastic, strange and mysterious creatures and animals in his work. The details are as follows:

1. The grand palace of Rāvaṇa was protected by many strange animals.
2. Certain characteristic horses were neighing
3. There were many elephants and they had four tusks.
4. Protected fat animals and birds were also there.
5. The palace was protected by four tusked elephants and as well as three tusked animals.

However, three tusked animals are not named (emphasis added)

The first four depictions are in Sundarakāṇḍa (4.25-30) and the fifth one also in Sundarakāṇḍa (9.5) of Vālmīki Rāmāyaṇa.

A Translation from other version / Critical Edition etc:

For comparison and considering other view, the verses and their translation from the following website is given:
http://www.Vālmīkiramayan.net/sundara/sarga9/sundara9 frame.htm
Incidentally, this is also from the critical edition of Rāmāyaṇa prepared by the Baroda Institute.

triviṣṭapa nibham divyam divya nāda vināditam I
vāji hēsita saṅghustam nāditam bhūṣaṇaiḥ tathā II 5-4-26

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rathaiḥ yānaiḥ vimānaiḥ ca tathā gaja hayaiḥ subhaiḥ I
vānaraiḥ ca catuḥ dantaḥ śvētaabhranicaya upāmaiḥII 5-4-27
bhūṣitam ruciradvāram maṭṭaiḥ ca mṛga pakṣibhiḥ I
rākṣasa ādhipatē guptaṃ āvivēṣa gṛhaṃ kapiḥ II 5-4-28

26,27,28.. Mahākapihaḥ=The great Hanuma, Āvivēṣa = entered; Guptaṃ= secretly; Rākṣasādhipatīḥ = Rāvaṇa's inner city; Triviṣṭapahnibhaṃ = (which was like a paradise); divyam=best one; Vājigōṣita Saṅguṣṭaṃ = resonating with neighing of horses; Tathā=and; Nāditaṃ = made noisy; Bhūṣanaihaḥ = with ornaments; radhaiH = by chariots; Yānaiḥ = by vehicles; Vimānaiśca= and by aerial-cars; Tathā = and; Bhūṣitaṃ = decorated by; Subhaiḥyagajaiḥ = by auspicious horses and elephants; Śvētābhranicayōpamaihaḥ = equalling a group of white colouds; Vāranaiśca= by great elephants; caturdantaiH = with four tusks; Mṛgapakṣibhiḥ = by animals and birds; Maṭṭaiḥ = in heat;Ruciradvāraṃ = with a beautiful entrance; Rakṣitaṃ = protected;Yātudhānaiḥ = by Rākṣasās; Sumahāviraiḥ = with great strength; Sahasraḥ = in thousands.

The great Hanuma entered secretly Rāvaṇa's inner city which was equal to paradise, rendered noisy by neighing of horses and tinkling of ornaments, by chariots, vehicles and aerial-cars and decoratyed by auspicious elephants and horses and great elephants with four tusks and by birds and animals in heat. It had beutiful entrances and was protected by thousands of Rākṣasās with great strength.

uttamaṃ rākṣasāvāsaṃ hanumānavalōkayān I
āśasādāthālakṣmīvān rākṣasēndra nivāsanaṃ II 5-9-4

caturviṣānairdviradaiḥ triviṣānaiḥ tadaiva ca I
parikṣiptaṃ asambādhaṃ rakṣyamānaṃudāyudhaiḥ II 5-9-5

4,5, atha = thereafter; Hanumān = Hanuma; Lakṣmīvān = the glorious one; Āśasāda = neared; Uttamaṃ Rākṣasāvāsaṃ = the best residence of Rākṣasās; Rākṣasēndra Nivāsanaṃ = (and) the house of Rāvaṇa; Parikṣiptaṃ = containing; Caturviṣānaiḥ = (elephants) with four tusks; Tathaivaca= and also; Triviṣānaiḥ = those with three tusks; Dviradhaiḥ= two tusks; Asambādhaṃ = not crowded; Rakṣyāmānaṃ = protected; Udāyudhaiḥ = by those bearing raised weapons; Avalōkayān = observing (it).

Thereafter, Hanuma the glorious one neared and observed the best residence of Rākṣasās and the house of Rāvaṇa, containing elephants with four tusks and also those with three tusks, those with two tusks and still not crowded. It was protected by soldiers bearing raised weapons.

Here, the word "Maṭṭa" is translated as "heat" instead of "fat". In another place, "Maṭṭadvpasamakula " (Yuddhakāṇḍa, 2-10) is translated as "filed with fatty elephants" only. However, three and four tusk elephants are recognized, but their significance is not interpreted scientifically. Even the scholars who prepared critical edition have not noted as to how the interpolators of the first or fourth century could have incorporated such details without actually seeing!

What are the Animals described here?

The animals and birds described are like this: There were many strange animals. Certain characteristic horses

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were neighing. There were many elephants and they had four tusks. Protected fat animals and birds were also there. In fact, the dinosaurs in the formation stages looked like birds without wings just like penguins. In fact, according to phylogenetic texonomists, birds are by definition maniraptorans and the other maniraptorans are their closest relations. A maniraptora is defined as containing all dinosaurs features closer to brids than ornithominids. Paleontologists have found the fossils of dinosaurs - brids/ feathered dinosaurs/dino-birds at China (Sinosauropteryx), Madgascar (Rahonavis), Southern Germany (Neopteryx), Italy(Scipionyx), Mongolia (Mononykus) and so on. There were four tusked elephants and as well as three tusked animals. However, three tusked animals are not named. That even the scholars, who edited add prepared the critical edition of Ramayan have noted and included in the edition is significant. In fact, it notes that the horses are "wondrous steeds". However, they have neither objected to such description of birds and animals nor declared such verses interpolated. Therefore, the description is to be verified scientifically for its veracity and authenticity. As now, geologists, paleontologists, biologists and other scientists have provided enough evidences about the origin of different animals and birds from the available information, the possible description is correlated.

The four-tusk elephants are named as Stegotetrabeldon syrticus, Tetrabelodon angustidens, Gomphotherium, Tetralophodon, Trilophodn and Platy-belodon and they are recognized by the paleontologists in 19th and 20th centuries only.

According to modern scientists, the big elephants with big jaws and small teeth are called Tetrabelodon and others Deinotherrium, which lived about 13 to 135 million YBP. The elephants with big ears and lengthy and bent tusks lived about 63 to 135 million YBP during cretaceous period. The elephants with dense hair, bent tusks lived about a million YBP during pleistocene period. These type of animals have been depicted on the horns of deer known as Arknecian.

One / two / three / four-tusk Elephants:

Scientifically, the existence of one/two/ three/ four tusk elephants have been proven based on the fossil evidences. They are discussed as follows with diagrams. They are represented as Trilophodon, mammithera. Scientists accept that the small, tapirlike Moeritherium, the earliest member of the proboscidean line, gave rise to a large and wide spread population of which the African and Indian elephants of today are the only living representatives.

The is the one-tusker elephant found around camp in Ruaha, Kenya.Four-tusked Trilophodon lived from the Miocene epoch (26 million years ago) to the Pleistocene epoch (2 million years ago) in Eurasia, Africa, and North America. Also seen in the Miocene epoch were thedownward-curving tusks of Deinotherium. Platybelodon, with its lowered, flattened, shovel-shapped tusks probably used for scooping vegetation from the water occupied Asia and North America in the late Miocene epoch and the

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pliocene epoch (7 million years ago). The largest proboscidean, the Imperial Mammoth, Mammithera imperater, was well adapted to the cold in Eurasia, Africa, and North America during the Pleistocene epoch. Its teeth were much like those of the modern elephant.

Evolution of Elephant is Implied?

By mentioning three-four tusk elephants together and separately, was Vālmīki implying the evolution of an elephant? About elephants scientists point out that most elephants found on Sri Lanka, male or female, have no tusks, though, Tusks continued to grow throughout the elephant's life, in other cases. How, then, Vālmīki could locate elephant with tusks, that three-four in Lanka. Does it mean that the Lanka, he describes is different from the present Sri Lanka/Ceylon?

Among the Asian and African elephants, there are two species. The Asian elephant, Elephas maximus, found in India and SE Asia, and the African elephant, Loxodnta africana, found in Africa south of the Sahara. African bull elephants may reach a shoulder height of 13 ft (4 m) and weigh 6 to 8 tons (5400-7200 kg). Their tusks are more than 10 ft (3 m) long and weigh up to 200 pounds (90 kg) each. Females are some what smaller and have more slender tusks. African elephants have enormous ears, measuring up to 42 in. (107 cm) in diameter. The long, conspicuously wrinkled trunk terminates in two fleshy, finger like protuberances, used for handling objects. The Indian bull elephant reaches about 9ft (2.7 m) in shoulder height and weighs about 3.5 tons (3200

kg); its tusks are up to 6 ft (180 cm) long. The female of this species has no tusks. The ears of the Indian elephant are much smaller than in the African species, and the trunk somewhat shorter and smoother, ending in a single protuberance.

These are the figures generally given by the scientists to depict how the elephants evolved and developed into other categories during millions of years and then attained the present form with two tusks. so fascinated by the four tusk elephants, Libya, in 1995 issued stamps, as shown on RHS depicting Stegotetrabeldon syrticus.

Photo courtesy from :
http://www.adias-uae.com/stegotetrabeldon.
html#tetralophodon

Many more photos can be seen in the website.

Strange Neighing Horses and wondrous steeds: The details given by Vālmīki about horses have been very intriguing as scientists have never perceived the presence of horses in the southern hemisphere. According to them, the very first horses evolved on the North American continent over 55 / 60 million years ago from small dog like animals. Oven millions of years they roamed the grasslands slowly extending their range to most of the continents on earth. Then horses migrated across the Bering land bridge from North America into what is now Siberia. From there, they spread across Asia into Europe and south to the Middle East and Northern Africa. Horses vanished from both north and South America in a wave of extinction that occured at the end of the pleistocene epoch,

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about 15,000 years ago. Horses nearly became extinct in the rest of the world as well, by about 7000 years ago the worlds only horses were confined to a small area in the still open grasslands steppers of Ukraine and central Aisa. For further details, see the websites:

http://www.pbs.org/wildhorses/wh origin/wh origin.html
http://www.irishhorsesociety.com/horsedata/horseorigin.htm

Scholars always argue that horses was not there in India before ç.1000 BCE. Therefore, the horse in Lanka is anathema to the present day archaeolo- gists and historians. Here, also Vālmīki's description is perplexing. Neighing horses and "wondrous steeds" are mentioned in the critical edition also (P. 598-99), as has been recorded by H.D.Sankalia[3]. Does it mean that he saw them at the end of the pleistocene epoch, about 15,000 years ago?

Dinosaurs in India:

Recently, again much has been talked about dinosaurs in India", as India had its own dinosaurs, which roamed about 6.5 crores years ago[4]. A joint Indo-American team of palaeolontologists and geo- logists, which found the fossil, has given it a Sanskrit -Latin zoological name "Rājasaursanarmadēnsiyas ".

But, it may be noted that D.N. Wadia[5] has already recorded the find of the vertebrate fossils include Dinosaursrian reptiles on the beds of Narmada. 'The

discovery of remains (in early 90's) of Cretaceous dinosaurs from Jabalpur and Dispura, Chanda District has greatly increased our knowledge of the fossil dinosaurs of India', he noted. Ashok Sahni[6] has given details as to how these species roamed through India.

Prof.Von Huene (1833) stated that Madhyapradesh fossil dinosaurs are closely allied to those occuring in the Cretaceous of Madagascar and also with those found in Patagonia and Brazil. This suggest land-bridge in the existing Indian and Atlantic oceans or the persistence of large remnants of the Gondwana continent.

The details of Indo-American team findings with figures found from

http://news.nationalgeographic.com/new/2003/08/0812 030812 indiadinosaur.html

are given for understanding purpose.

some of the actual fossillized bones of a new 65 million-year-old dinosaur species identified from bones collected in India. The fosils come from a stocky, carnivorous dinosaur that lived at the end of the dinosaur era, as the Indian continent migrated north. Cast of the skull of a new dinosaur from India, identified from 65-million-year-old bones collected there. The find, funded by the National Geographic Society, announced in Mumbai. The cast, and another like it, donated by the researchers to Punjab University and the Geological Survey of India.

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A stocky, carnivorous dinosaur, 5" tall and 30" long with unusual head crest has been identified from bones collected in India. American and Indian scientists, working with support from the National Geographic Society, have named the animal Rajasaurus narmadesis.Illustration (LHS) by Todd Marshall 2003, National Geographic Society.The figure on RHS is from (for large figure go to the site) http:///www.iisc.ernet.in/~currsci/oct 102003/904.pdf . Thus, we note, all the issues are directly or indirectly related to the Wegner's Continental drift hypothesis / Platetectnonic theory etc.

The Fossils of Antique-elephants found in India:

Interestingly, the fossils of the following species of elephants have been found in India:In the Upper Siwalik, the elephants found belonged to: Mastodon sivalensis, Stegodon ganesa, S.Clifti, S.insignis, Elephas planifrons, E.bysudricus, E.mamadicus. In the Lower Siwalik, the elephants found belonged to: Dinotherium, Tetrabeloton, Prostegodon cautleyi and latidens, Stegodon clifti, Mastodon hasnoti.Thus, it is evident that these elephants (marked bold and italic) with three and four tusks walked in India and therefore, the description of Vālmīki has been reasonable, tenable and sustainable. Of the nearly thirty species of elephants and elephant-like creatures that lived in the Siwalik province, and were indigenous to it, only one is found today. Therefore, because of the time, other species would have become extinct as happened elsewhere.

Fossils of Horse also Found:

The fossils of Equus sivalensis and other varieties have been found. The skeletal remains of Equus Caballus Linn (= "the domesticated horse", in the sense used by man for riding, chariot riding / racing, cavalry and so on) has been found at Surkotada by J.P. Joshi spread over a very long period of time, from about 2300 to 1700 BCE (Periuod IA to IC)[7]. Similar evidences have been given by A.K.Sharma[8] a Surkotada, V.V.Rao at Kalibangan, Bhola Nath at other places (Harappa, Ropar and Lothal). Therefore, here also, a question arises as to why Indians should have taken so much time to domesticate horses only around 2300-1700 BCE period. In between, because, we find Bhimbetka cavemen depicting horses dated to 30,000-20,000 YBP.

Rāvaṇa - the "Steven Speilburg" of Rāmāyaṇa Age:

No historical idiosyncronism is imported when Rāvaṇa is mentioned as "Steven Speilburg" of Rāmāyaṇa age. but the message is conveyed. Rāvaṇa was not a Rākṣasa, as has been depicted, but ordinary man and was definitely a great king or even emperor ruling Laṅka, the southern hemisphere of the then world. His subjects were of different categories, creeds and ethnos. His ruling area was subjected to several geological disturbances, as is evident from many examples recorded by Vālmīki. That his city was constructed on Trikūṭa hill, at an elevated place surrounded by oceanic waters proves the fact. He records the disturbances as follows.

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Earth Disturbances Recorded by Vālmīki:

Besides, the birds and animals, he has made specific observations about the land disturbances taking place in the southern hemisphere, particularly, near Rāvaṇa's Lanka.While describing the route, Sugrīva, at one place notes that rocks were there scattered broken by thunders. After crossing Bhagavati (Kiṣkindhakāṇḍaṃ. 41:40), there had been countries hidden (41:41). The description, when Hanumān starts his journey to Laṅka for the Mahēndra hill is interesting and informative in the context. In Kiṣkindha-kāṇḍaṃ, two different observations noted by him about the condition of the Mahēndra hill is to be analysed here. First, the notes that the Mahēndra hill had been submerged under the sea by Agastya (Kish. 41: 20 - 21). Later, he notes that when Hanumān pressed the Mahēndra hill to start flying, great noise came (it started howling) (Kish. 67:47). That great mountain gave out broken stones and waters oozed out (48). The peaks crumbled down and the entire place was filled with stones (49-50). Because of the disturbances, snakes came out and their bodies particularly trapped in the grounds (51). The oozed out waters from the Mahēndra mountain increased (Sundarakāṇḍam.1.17), cracks developed (18), stones fell down (19). The stones cracked and scattered, as if the mountains were breaking down by some force (298-30). Trees fell in the ocean (58). The spot, from where he jumped to fly appeared disturbed (77). Thus, at one side Mahendra mountain was submerging, and another side Mainaka mountain started raising (103). It raised from the waters (120). Piercing the oceanic waters, it raised

(121). There was a period, mountains were with wings and flying (132). As Indira cut off of their wings, they fell down and submerged (235-236). These observations made by Vālmīki have been clear indication that the period witnesed submergence of landmass at the south of Bharadakhaṇḍa. Demythologizing, we can conclude that the landmass had been split into small islands and started submerging, because of tectonic processes or sea level rising.

In spite of the problems, Rāvaṇa must have taken great care for the welfare of his subjects including flora and fauna as evidence from the description of Sundarakāṇḍa. He had taken interest in preserving and protecting the species of birds and animals. This only revealed in the strange description as noted above. Vālmīki has been describing forests with flora and fauna in many places, particularly, in Araṇya , Kiṣkindha and Sundarakāṇḍa, but only in Sundarakāṇḍa, he makes such specific references in the context of Rāvaṇa's Laṅka.

Floating Stones at Rameswaram:

Again recently, much has been discussed about "Floating stones at "Rāmēśvaraṃ. However, they have been at the temple, and because of the publicity given by a TV Channel, such discussion has reached internet for discussion. Scientists declared that they were nothing but pieces of coral reef. They are found in plenty in tropical zones of the oceans, particularly in equator region. They have also recognized and identified the follwing necessary conditions for the development of coral reefs:

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1. A sufficiently highmean annual temperature of water
2. A high level Calcium carbonates in waters related to thermal condition.
3. Salinity of sea waters.
4. Shallow sea for the development of algae etc.
5. Large quantities of Oxygen required for the propagation of the colonies.

For more details of Coral reef system of India go to http:// www.envfor.nic.in/ icrmn/ misc/ cres.html.

In Vālmīki Rāmāyaṇa (Yuddakāṇḍa, Sargam.22, Ślōkās. 54-65), a detailed description is available about the building of bridge by the army of Rāma using different trees, stones, mud etc.

1. The effect produced by the arrow of Rāma inoceanic waters producing heat etc., point to sufficiently high mean annual temperature of water (Sloka.39).
2. Rise and fall of oceanic waters with the creation of "Mrikantram", a landmass indicates the submergence and emergence of landmass (s.36).
3. The presence of living organism on "Mrikantram", the newly created landmass with thermal condition is significant (s.41-42).
4. That the king of Ocean gave "highland" to Rama accepting or instead of "lowland" (s.49).
5. All these incidences show the disturbances taken / taking place during the material period.

That these stones, i.e, coral reef pieces, float on the oceanic waters or such floated land masses or tiny islands

were there once upto equator connecting the Rāvaṇa's Laṅka to Jambhudvīpa / Bharadakhaṇḍa is very significant and notable. Whether Rāma and his army actually built a bridge like this or the bridge-like coral reef was there already, thereby, they reached Laṅka by crossing over the waters and coral reef islands is to be analyzed here. Knowing the fact, the poet might have recorded such scientific fact camaflouged in poetic fancy in his times. The proof being the "Floating stones at Rāmēśvaraṃ", available even today. Thus, the litérary, epigraphical, archaeological, geological, paleontological evidences suggest that these southern island-nations must have been joined together. Such possiblity also supports the Wegner's theory of platectonics / continental drift / Pangea / Kumarikkandam / Lemuria hypotheses and theories. In fact, the distribution of extinct animals is correlated with the combined land mass existed during the Jurassic / cretaceous period.

Whether Rāma actually, built a bridge with stones or coral reefs or the coral reef islands or land masses were situated so closely, that Rama and his army crossed over easily or the gaps were filled and crossed are subjected to debate. However, Vālmīki could have observed such phenomena and recorded the climatic, geographical and geological condition of his period. The stretch of coral reef islands situated south of India extending up to equator give interesting details in the context and location of Rāvaṇa's Laṅka. Scholars have been divided about the locaton of Rāmāyaṇa/Rāvaṇa's Laṅka.However, based on astronomical evidences, a group of scholars locate it at Maidieves / Male atoll situated exactly on equator.

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It may be noted that these islands were joined together forming a big land mass long back and slowly separated from each other, thereby the existing land masses / continents formed. In between the separated continents,small landmasses and islands were submerged.

The islands between Africa and India (between 40° to 84° longitude) are Madagascar,Reunion, Mauritius, Saya de malha, Chagos Archipelagp, Maldives and Sri Lanka. Of which, the submergence of Saya de Malha during 17th - 18th centuries is a recorded one and Maldives, a group of islands are situated on equator.

Figures from Maldives: The pre-Islamic history (before 12th century) clearly shows the existence of Indian culture. As only few archaeological evidences are available now, the complete picture is not obtained. Some figures published by Thor Heyerdahl are shown below. The sculpture from the pre-12th century Maldieves is unmistakably depicts a Rākṣasa, may be from Rāmāyaṇa. The statue fround in thoddu, west of Male atoll in early 1980s is definitely that of Buddha. The Buddhist influence is found in the place names also (Clarence Maloney's people of the Maldive Islands, published by Longman, Mumbai in 1980). Thus, it is evident that the people of Maldives have crossed the cultures of Hindu and the Buddhist to get converted to Islam after 12th - 13th centuries.

Certain details found in the Tamil epic, Manimekalai authored by Sittalai Sattanar dated to first century CE is intersting to mention. He describes many islands situated South of the ancient Tamizhagam, the people who lived

there, the Buddhist stupas., etc. Particularly, the Manimekalai story is found in the origin of royal dynasties of South East Asian Countries. The brief is - Manimekalai is the beautiful daughter of Silappatikaram famous Kovalan and Madhavi. However, disgusted with the mundane life, she becomes a Buddhist monk. Once, a Chola prince saw her and fell love with her. Unfortunately, he was killed. The reason for his love towards her was that they were husband wife in their earlier life. The Maldive history also has such a story.

Thus, Koimalakaloa, a prince married to the princess of Laṅka, came to Rasagetheemu Island of Maldives long back, and then, settled in Male with the consent of aborines of Giraavaru island. Of course, the "Kitab fi Athaan Meedo el-Qadimiyyeh" traces origin directly to India. Earliest known history of the Maldives is recorded in these metal tabs known as "Lōmāphānu", which is shown on LHS.

LHS: Sculpture from the pre-12th century Maldieves.

RHS: Statue found in Thoddu, west of Male atoll in early 1980s.

Thus, it is evident that the archaeological evidences pertaining to pre-12th century period have been slowly disappearing.

The epigraphical evidences also prove the fact. A sample inscription, studied by H.C.P.Bell[10] is shown above. In fact, the script resembles Sinhalese and as well as SEA scripts. Thus, the script found behind the Rākṣasa figure shown on LHS indeed shows Pallavan influence. As the script found in the Maldieves resembles Pallava, the following possibilities are considered:

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1. During first centuries, the pallavas should have established their contacts with Maldieves and other Indian Ocean Islands, besides, SEA countries".
2.. As otherwise, within 100-200 years, such an influence or impact could not be made in these areas, that too, separated by thousands of kms distance in North-East, East and South of Southern India.
3. That they could have reached before Buddhists proves that the land andsea contacts were well established and frequent.
4. Once, these countries might be connected together.

The last possibility is purposed proposed to link with the paleontological evidences as noted. For this, the following are considered:

1. That a Pallava prince married to a Naga or Andhra princess, who started the Pallava dynasty resembles the stories of these island countries as pointed out above.
2. The Hindu - Buddhist prevalence during first centuries both BCE and CE.
3. Indian astronomers have been consistent in locating Rāvaṇa's Laṅka on the equator.

Anyway, the pre-Islamic history of Maldieves has definitely many mysteries and riddles, challenging researchers.

Those, who locate Rāvaṇa's lanka in Maldieves should take all these facts into account, besides the astronomical evidences provided by Sūryasiddānta, Āryabhaṭṭīyaṃ and other works. Whatever geological

significance may be connected with these islands and land masses, that these islands were connected, linked or associated with atoll / coral reef as implied by the poet is remarkable. The following figures show the relation between the continental drift and animal distribution.

Do the NASA Photos Depict Rāvaṇa's Lanka?

The NASA photo of the "man made bridge" connecting Rameswaram and Sri Lanka with the note that it was built about 17,50,000 YBP published recently in newspapers is not new one many think. Similar photo was published in 1993 itself (Indian Express March 25, 1993) with a report under the caption 'Rāma's bridge on NASA photo' (Indian Express, March 24, 1993). In fact, the report was based on two photographs displayed at Pragati Maidan, New Delhi at that time one that of NASA taken September 14, 1966 displayed with the caption " the mythological land bridge between India and Sri Lanka through Rameswaram and Jaffna" and the other one taken by IRS-IA and enlarged read "Computer-alerted image shows the mytrhological land bridge between India and Sri Lanka through Rameswaram and Jaffna". Therefore, it is evident that after 36 years, USA or the persons behind have decided to change "the mythological land bridge between India and Sri Lanka through Rameswaram and Jaffna" to "man made bridge" implying that Rāmāyaṇa period is not 5 millenium BCE, but perhaps goes back to Trētāyuga (17,28,000 YBP), as has been held by the Purāṇās. Anyway, now, it has to be decided historically with the astronomical methods. At one

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side, this date might coincide with the date of the above extinct animals depicted scientifically and as well as found in Sundarakāṇḍam. But, the practical problem is to correlate the geological age with the historical age.

The Basis of Vālmīki's Description:

The Indian method of story telling has to be appreaciated in the process of literary criticism, critical edition preparation, sociological interpretation or any type of reasearch. What is rendered orally is meant for listeners. Therefore, here, the time and place differ depending upon the capabilities of the presenter/performer and listener/ audience and vice versa. The Indian tradition is to preserve all arts and sciences symbolically in the literature so that the progeny would not forget the facts. Accrodingly, Vālmīki has recorded many historical happenings of different categories in the appropriate places, so that listeners would understand, realize and apply such principles for their lives. That is why "Listening is better than learning" has been proverbial method of teaching in Indian tradition. In fact, this again points out the scientific fact, that ear is the first organ to develop in the fetus after conception.

Many times, the performer/speaker has to explain applying subjective and objective sybolism to drive out and explicated the points. Thus, he has used such methodology in his rendering. Take the example of the evolution of elephant. This might be under process of evolutlion or extinction at his times in Lanka. But, thick skinned animals,

elephants with four, three, two tusks clearly proves the fact. As such species were rare, perhaps, Rāvaṇa was preserving and protecting his garden. P. E. P. Deraniyagala[12] has explained about some extinct elephants, their relatives and the two living species.

Vālmīki a Liar or Imposter or Forger?

Vālmīki's date itself has been put into dispute. Historians and other scholars vouchsafe that he was writing Rāmāyaṇa after the introdiction of script and the techniques of peotry into India up to 400 CE or 7th century CE and so on. So, if he wrote like that, then there should have been "A Jurassic Park" in Rāmāyaṇa indeed! Can Vālmīki bedubbed a liar or Steven Speilsburg has copied the idea from Vālmīki or directly from Rāvaṇa? Or Vālmīki copied these details from the modern book of Science living in 20th century? Had he resurrected and come to forge or interpolate to please the western writers? Or some wicked and history-senseless Brahmins interpolated just to appear just like that to claim antiquity? All concerned scholars have to answer honestly.

Paleantology, archaeology and connected fields and subjects have been perceived, conceived, evolved and developed only during the last 50 to 150 years. Georges Cuvier, the French Scientist is considered as the founder of palaeontology, the science of the organism that lived on earth in the geological past. Then, the dating methodology has been put into pactice to date the samples on relative/prepared scale. But, as Vālmīki or the poet have

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given such details, they cannot be brushed aside as myth. The date of Vālmīki or his work also cannot be underestimated without going into the details. That whoever may be could depict such details in his poem definitely puts him at the period of 12,000 when the cavemen drew on the deer horns. Or at the worst, he must have known the details 2000 to 5000 YBP. How, that, he could get such knowledge?.

As the men who drew such pictures on the horns lived before 12,000 years and scholars accept that they must have seen and drawn, definitely, Vālmīki, the poet or the writer who wrote Rāmāyaṇa with such description must have lived during the period of see and describe. As Indian archaeologists[13] and historians argue that the poet or writer of Rāmāyaṇa must have seen the later day monuments, buildings and sulpture to incorporate such descriptions, he must have seen the animals of such 65 to 135 million YBP and described in his Rāmāyaṇa. Incidentally, this period comes to Treatayuga, thebridge has laso been dated now as "man-made"!How these details could be found in Rāmāyaṇa? As the date of Rāma is questioned, discussed andplaced differently, the date of Vālmīki is laso subjected tot he same fate of analysis. He is placed int he third century BCE ast hen only, he could have learned to write in Brahmi script ont he basis of ancient ballads! Scholars also declarethat Rāmāyaṇa in itspresent form was ready by 7th century CE, developed in defferent stages. H.D. sankalia[14] identifies the following stages depending upon the opinion of other scholars:

1. First stage: Monier Williams[15] pointed out that the earliest portion of Rāmāyaṇa appeared to be pre-Buddist and composed in about 5th century BCE, because it had no reference to places in western and southern India, P.V. Kane[16] says that the core of the Rāmāyaṇa might have been as old as 300 BCE at the most
2. Second stage: It is the stage when Vālmīki composed the kernel of the epic falls between 500 and 300 BCE. Panini in his Asthtadhyayi did not mention any other place other than Kosala and Kayasalya, Kekaya and Kaikeyi, and Bhara and this is the main reason for arriving at this date.
3. Third Stage: It has been postulated by Ananda Guruge[17] and is said to fall between 300 BCE and 100 Ce.
4. Fourth Stage: Mentioned as "next stage", the "archetype" is believed to have split into main recessions according to Bulcke[18] or various recessions according to other scholars.
5. Fifth Stage:This was the last stage when numerous legends or references to Rāma as incarnation of Viṣṇu got into the Bālakāṇḍa and Uttarakāṇḍa.
6. The very last interpolation: According to Guruge[19], it was in the 7th century, when the list of contents (anukaramanika) and they story about origin of the sloka-metre were added.

Thus, the learned archaeological, historical and other expert scholars imply that Vālmīki was writing Rāmāyaṇa or Rāmāyaṇa attributed to him was interpolated from the pre-Buddhist period to 7th cent.CE in India! However, the King Prakasadharma (c.653-679) deified him in a temple with consecrated image only in Champa at Tra-kien i.e, immediately in the same century!

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1. Thus, if the poet known as Vālmīki or anybody else was writing poetry in 400 CE or evenupto 7th cent.CE. how he was able to record these details?
2. Sankalia argues that Vālmīki must have seen the existed / existing art and architecture of Bahrut, Sanchi, Deogarh and other places to incorporate such description in his work. But he kept silent about these descriptions.
3. How Vālmīki could have given such details, which were known to the world only in 20th-21th centuries after recovering the fossils, reconstructing and visualizing such birds and animals depicting in drawings / diagrams ?
4. Does it mean that Vālmīki copied such descriptions from the modern books (implying that interpolations continued upto 20th - 21th centuries) or such type of books containing description / diagrams were available in his period c.600 BCE to 7th cent.CE to mention or such animals themselves were existing? The possibilities are:

1. When Vālmīki was composing / writing Rāmāyaṇa, the following must have existed:
   i. three / four tusk elephants and other animals.
   ii. South India and Ceylon was connected with a bridge.
   iii. Or a coral reef islands must have existed upto equator connected India.
2. As such pictures were depicted in cave paintings 12,000 YBP, similar paintings could have existed in India also and the poet could have seen.
3. During the period c.600 BCE to 699 CE (7th cent), some books must have there depicting such details or diagrams, thereby, the poet could have incorporated in his work.

4. The modern scholars must have been influenced by writings of Vālmīki without acknowledging him.

If nothing was there, what other reasoning could be given? Just by imagination, he could not have done so. Moreover, the argument is that if he could have imagines and composed poems after actually seeing the sculptures of Bahrut, Sanchi, Deogarh and other places, then, it can also be argued that he would have seen such animals and described so. Had the evidences of Bahrut, Sanchi, Deogarh and other places are reality, the evidences of animals are also reality.

Vālmīki, Charles Berlitz, Sankalia: The names of the scholars are used here to denote figuratively certain group of schools or thinking behind the scholars and not to individualise or otherwise. Charles Berlitz says that the writer of Rāmāyaṇa must have actually travelled in an airplane to describe earth, when he was doing so through Rāma to Sīta sitting in a Puṣpakavimāna ! Erich Von Daniken, Raymond Drake and other scholars also point that the ancients had flying machines or airplanes. However, Sankalia and his followers or the scholars who have such thinking doubt everything that is "supernaturalized", the plane, the divine weapons and so on! But, modern minds could not accept without any material evidences datable to such hoary past. Sankalia's argument has been discussed already. Now, where to draw line among these scholars?

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1. Ancient poets describing animals or events datable to hoary past.
2. Modern writers giving scientific interpretation and accepting such past and also producing some material evidences.
3. Archaeologists and historians denying such past not accepting the material evidences produced by the above on the plea that they are not obtained from the scientifically excavated sites.

Here, each group is separated by time and place factors. The first group cannot come to argue their case, whereas, the other two groups would always stick to their stand, There are limitations in each field and the experts of the fields cannot assert that their conclusions alone are final and others should accept.

Conclusion In the case of dating of Rama, Rāmāyaṇa period, Vālmīki, evolution of writing, kavya style poetry, Iron, weaponry, horse, chariots etc., the scholars have come to conclusions with the extreme views. It is evident that the available archaeological evidences at different parts of India (before and after independence) have been mixed up datable to different periods. Though, geological dates of places with flora and fauna are dated to such antiquity, the historical evidences are coming to c.1000 BCE with the exception of IVC, which goes back to c.3,500 BCE, but considered as proto- historic.

The main debatable point is as to whether Man actually could have lived during Jurassic period or the period when the three-four elephants lived. Here also, the paleontologists note that man could have lived along with dinosaurs based on some fossil evidences. Paintings on the caves dated to 12, 000 YBP and carvings on horns figuring dinosaurs along with the man are also citied. There are reports to the extent that man and dinosaurs co-exited. The Moscow News(no.24, 1983, p.10) reported:

"This spring, an expedition from the Institute of Geology of the Turkmen SSR Academy of Sciences found over 1,500 tracks left by dinosaurs in the mountains in the southeast of the Republic. Impressions resembling in shape a human footprint were discovered next to the tracks of the prehistoric animals."

About Ice age also differing views are offered, but, now scientists accept that man lived 16,000 to 18,000 YBP. Fossilized hand and footprints have revealed that mankind lived on the Tebetan plateau at the height of the Ice Age--16,000 years earlier than anyone previously thought, Margeret Cooper in herbook, "Exploring Ice Age", records prehistoric man who lived 35,000 years ago with details what they may have eaten, where they lived, and how the people who lived in Europe during the last at Ice Age survived. It also includes descriptions of Ice Age hunting techniques and tool making, as well as a section on the Ice Age people's beautiful and powerful art.

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Therefore, the main issue boils down to the study of fossils, dating and correlating with historical evidences. As opined by some scholars[20], the present system of fossil studies is relatively inadequate and conditioned with presumptions bythe fact that the dynamics of the geographical plate movements are not known precisely beyond a time (in order to trace the history). A huge shift is noted in the interior layers of earth every time a pressure shoot in the core occurs and magma rises up to the crust. This could affect the whole quest into the possible remains of the past, especially connected to living species i.e, all material eveidences would have been destroyed. For example, a natural disaster may destroy a civilization about 100000 years back, then, the possibility of tracing it at the same geographical area is very difficult becuase of the layer shifts and stronger magma currents. Moreover archeologists do not have a precise methodology for large area transient geographical fossil tracking.

The archeologists claim only to the discovered ones within a few hundred meters depth. So with the discovery of a few hundred skeletons and predicting the possible age of human civilization and characterizing the finding and finally generalizing it is not correct, Moreover, they accept that without horizontal excavation conducted at the traditional cities like Taxila, Patna, Ayodhya, Nasik, Sringaverapura, and other places, the existence of even historical personalities cannot be proved. H.D. Sankalia himself accepted on the same lines, there are no evidences for Chandragupta Maurya, Asoka, Kanishka etc.

Though goelogists have assigned millions of years to such species and periods, the avalability of the following evidences make to rethink:

1. The proven human habitation on these scattered islands situated in Indian Ocean but separately 100s/ 1000s of Kms.
2. A common pre-christian, pre-islamic, pre-Buddhist cultrue, tradition, heritage and civilization existing and point to India.
3. The Pallava script found in South East Asian countries during the period of Pallava period of India. In fact, some inscriptions with Pallava script are dated to pre-pallava period there is intriguing.
4. The Indian Asokan Brahmi acript is dated to c.300 BCE and that of south Indian counterpart to c.300-200 BCE only, whereas, the Brahmi script of Sri Lanka goes back to c.600 BCE with the strange fact of non-existence of Asokan edicts. Though Buddism was reportedly lintroduced bly Asoka through his missionaries in these Islands- Sri Lanka, Lakshadwip, Maldives etc., the absence of Asokan edicts are intriguing.
5. The Dwaraka and Khumbat findings question the restriction of historical period to Alexander's invasion.
6. A Sundara recently proves that the megalithi-Iron users of Asokan period of Karnataka goback to c.1200-1000 BCE.
7. The existence of so-called "aborigines" in all these Island-countries,either with their own or supeimposed culture (according to modern scholars) exhibiting Indian origins.
8. The material evidences of "aborigines" and other people, therefore, must have been dated based on "relative chronology/period".

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